

Applicant : David R. Maas et al.
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Attorney's Docket No.: 13506-015001

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Amended) An apparatus for aerating soil, comprising:
first and second shafts rotatably coupled to a carrier, the first and second shafts being substantially parallel and being spaced apart by a separation distance;
a first set of soil aeration tines attached to the first shaft, each tine in the first set rotating relative to a ground surface in one of a first set of rotation planes; and
a second set of soil aeration tines attached to the second shaft, each tine in the second set rotating relative to the ground surface in one of a second set of rotation planes, wherein none of the second set of rotating planes overlap any of the first set of rotating planes.
2. (Original) The apparatus of claim 1, wherein each tine in the first set of aeration tines extends radially from the first shaft to a distance greater than one-half the separation distance and each tine in the second set extends radially from the second shaft to a distance greater than one-half the separation distance.
3. (Original) The apparatus of claim 1, further comprising a support shaft rigidly coupled to the carrier along a central axis of the carrier.
4. (Original) The apparatus of claim 3, wherein the first shaft is offset from the support shaft such that the first set of tines is operable to revolve about the first shaft without interference from the support shaft.

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5. (Original) The apparatus of claim 3, wherein the second shaft is offset from the support shaft such that the second set of tines is operable to revolve about the second shaft without interference from the support shaft.

6. (Original) The apparatus of claim 1, wherein the soil aeration tines are operative to penetrate and remove a portion of soil from a ground surface.

7. (Amended) The apparatus of claim 1, wherein each aerating tine comprises a cutting tube coupled to a blade portion, the cutting tube being laterally offset from the blade portion.

8. (Withdrawn) A soil aerator, comprising:

a frame adapted to be coupled to a vehicle which transmits a pulling force from the vehicle to the frame; and

a soil aeration apparatus mounted to the frame such that the frame is operable to transport the soil aeration apparatus over a ground surface, the soil aeration apparatus having a plurality of arcuate aeration blades attached to a tine-holder shaft;

wherein the plurality of arcuate aeration blades are operable to penetrate the ground surface at substantially the same time to form a plurality of aeration pockets, and

wherein the arcuate aeration blades are operable to penetrate the ground so as to produce a downward force urging the frame toward the ground.

9. (Withdrawn) The soil aerator of claim 8, wherein the frame is coupled to the vehicle by a one-point hitch member.

10. (Withdrawn) The soil aerator of claim 8, wherein the soil aeration apparatus is operable to aerate soil without the provision of positive ballast or an externally applied downward force.

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11. (Amended) An apparatus for aerating soil, comprising:

first and second holding means coupled to a carrier, the first and second holding means extending axially from the carrier in substantially parallel relation and being offset by a separation distance;

a first soil fracturing means attached to the first holding means, the first soil fracturing means extending radially from the first holding means to a distance greater than one-half the separation distance; and

a second soil fracturing means attached to the second holding means, the second soil fracturing means extending radially from the second holding means to a distance greater than one-half the separation distance;

wherein the first soil fracturing means is staggered relative to the second soil fracturing means such that the first soil fracturing means is operable to revolve revolves about the first holding means relative to a ground surface without interference from second soil fracturing means.

12. (Original) The apparatus of claim 11, wherein the first and second soil fracturing means are operative to penetrate and remove a portion of soil from a ground surface.

13. (Original) The apparatus of claim 11, wherein the first and second soil fracturing means comprise soil aerating tines having tubes, blades, spikes, or a combination thereof.

14. (Amended) The apparatus of claim 13, wherein each aerating tine comprises a cutting tube coupled to a blade portion, the cutting tube being laterally offset from the blade portion.

15. (Original) The apparatus of claim 13, wherein the first soil fracturing means comprises a first set of aeration tines, each aeration tine extending radially from the first holding means.

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16. (Original) The apparatus of claim 15, wherein the second soil fracturing means comprises a second set of aeration tines, each aeration tine extending radially from the second holding means.

17. (Original) The apparatus of claim 11, wherein the first holding means comprises a first tine rack and the second holding means comprises a second tine rack.

18. (Withdrawn) A system for forming aeration pockets in a ground surface, comprising:
a soil aeration apparatus mounted to a frame such that the frame is operable to transport the soil aeration apparatus over the ground surface, the soil aeration apparatus having a plurality of arcuate tines attached to a tine-holder shaft;

a planetary gear system coupled to the tine-holder shaft and being operable to drive the arcuate tines in a rotational motion about the tine-holder shaft as the arcuate tines form aeration pockets,

wherein the soil aeration apparatus is operable to be transported over the ground surface at a substantially continuous rate of greater than about five miles-per-hour while the plurality of arcuate tines form aeration pockets in the ground surface.

19. (Withdrawn) The system of claim 18, wherein each arcuate tine comprises a blade portion having a convex face and a complimentary concave face.

20. (Withdrawn) The system of claim 19, wherein each arcuate tine forms an aeration pocket by cutting a groove in the ground surface.

21. (Withdrawn) The system of claim 18, wherein each arcuate tine comprises an aeration tube coupled to an arcuate blade portion.

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22. (Withdrawn) The system of claim 21, wherein the arcuate tines are operative to penetrate and remove a portion of soil from a ground surface.
23. (Withdrawn) The system of claim 18, wherein the soil aeration apparatus is operable to form a plurality of substantially continuous slits in the ground surface.
24. (Withdrawn) The system of claim 18, wherein the frame is connectable to a vehicle by a one-point hitch member.